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Subject: HGM

Bryce, Ken and Eric

Thank you for sharing with us the “Hydrogeomorphic Assessment (HGM) for the proposed 2,240 Acre Seven Hills Surface Mine, Warrick County, Indiana (IDNR Surface Mining Application #S-00357)” prepared by Eco-Tech Consultants for United Minerals in December 2006. EPA’s review was limited to the summary report provided. We understand that the accompanying field data sheets that support the report’s conclusion (and which were not reviewed by EPA) will be shared with us as well.

Based on our review of the information to date, the report presents a good summary of wetland functions onsite. The summary report states: “Functions 1 (Temporarily store surface water) and 5 (Retain particulates) exhibit that they are fully functioning as compared to standard reference wetlands for all sites [that were evaluated]. Function 2 (Maintain characteristic subsurface hydrology) and Function 4 (Remove and sequester elements and components) also display very high functional values for all sites.” The discussion in the report of how the West Kentucky HGM model was implemented is also consistent with similar applications we have seen in the past. EPA’s recommendations below are intended to provide a collaborative approach to the review of this project and to help ensure that a defensible permit decision by the Corps can be reached, consistent with the Clean Water Act (CWA).

- In order to finalize the assessment of baseline conditions at the project site, we recommend updating the HGM that was conducted in 2006 to include the current project boundaries and verified wetland acreages from the Corps' Preliminary Jurisdictional Determination dated July 17, 2015. We also recommend updating the field measurements collected in 2006 to reflect current conditions using the field data sheets from the West Kentucky Guidebook. This could likely be done most quickly by a consultant familiar with the West Kentucky Guidebook. With these updates, the agencies and the company will have a common understanding of wetland functions and current baseline conditions at the project site.

- To address the avoidance, minimization, and mitigation sequence requirements of the CWA Section 404(b)(1) Guidelines and the 2008 Mitigation Rule, EPA recommends utilizing the updated baseline condition information to evaluate opportunities for optimizing proposed avoidance and minimization measures to reduce wetland functional impacts and potentially the extent and cost of required compensatory mitigation. Such an evaluation would take into account the practicability considerations in the Guidelines. We recommend focusing on the following functions, all of which were assessed in the December 2006 HGM and would be included in the 2017 update: 1) temporarily store surface water, 2) cycle nutrients, 3) remove and sequester compounds, 4) retain particulates, and 5) provide habitat for wildlife. Some examples of ways to improve and protect these wetland functions at the project site could include avoiding the higher quality/functioning bottomland forested wetlands, minimizing impacts through appropriately sized buffers along Pigeon Creek, and inclusion of best management practices during mining and reclamation operations. After reviewing avoidance and minimization efforts, the company and agencies can identify compensatory mitigation to offset remaining unavoidable impacts.

- Also consistent with the 2008 Mitigation Rule requirements, EPA recommends that project impacts be mitigated in-kind with forested bottomland hardwood wetlands to assure that functional impacts are offset in the State of Indiana within the Pigeon Creek watershed (HUC 05410202). We recommend that baseline conditions for proposed compensatory mitigation sites be assessed using the same methods provided for in the West Kentucky Guidebook and used to establish baseline conditions at the project site. Estimates of the wetland functional benefits of restoration and/or enhancement actions at proposed mitigation sites can be determined utilizing one of several available functional calculators that EPA can recommend.

We recommend involving EPA and the other federal agencies early and often throughout the HGM process to minimize any potential issues and to expedite the path forward. EPA is prepared to offer assistance wherever it would be most helpful. This could include technical assistance on the field application of the West Kentucky HGM Guidebook, analysis of HGM results and mitigation steps, development of mitigation plans including identification/ selection of specific sites, actions to improve wetland functioning, performance standards, and adaptive management.

In addition, EPA offers the following background information and context, which we hope will be useful, given discussions the agencies and company have had recently regarding application of the West Kentucky Guidebook to this project.

Method

The Hydromorphic Approach to Wetland Impact Assessment was originally developed by the Corps' Engineer Research and Development Center (ERDC) in the 1990's. A major aspect of HGM is the development of regional guidebooks which are tailored to be used in specific areas of the country and based on local reference wetland information. "A Regional Guidebook for Assessing the Functions of Low Gradient, Riverine Wetlands in West Kentucky" (the West Kentucky Guidebook) was the first Regional Guidebook published by ERDC in 1999. It addresses 8 functions, with 27 variables (or metrics) and assesses a variety of activities which require CWA 404 permits including surface coal mining. The West Kentucky Guidebook can aid in a permit review as a part of a "sequence to consider alternatives, minimize impacts, assess unavoidable project impacts, determine mitigation requirements and monitor success of mitigation."

The HGM Approach remains a valid functional wetland assessment method nationwide and the only one to utilize reference data as a basis of calibrating indices. The most recent additions to the HGM approach by ERDC, completed in 2013, were Guidebooks covering wetlands in the Highland Rim of Tennessee, the alluvial valleys of the southeastern coastal plain, and forested wetlands of the Mississippi Alluvial Valley. As explained in the introduction to the Mississippi Alluvial Valley (MAV) Guidebook (Murray, E.O. and Klimas, C.V. 2013), current Guidebooks have built upon previous efforts. Additional reference data is collected, experience of end-users using the models is incorporated, and models are streamlined to facilitate use in the field.

However, as Murray and Klimas also point out, the original models upon which their current efforts were based were not invalidated. In fact, they recommended that for consistency and familiarity, older versions of models for the MAV are still appropriate for use. In the case of the West Kentucky Guidebook, updates to the format and reference data could be undertaken, but it is likely to have little or no effect on the outcome of the models. Therefore, use of the current version of the West Kentucky Guidebook is considered a valid approach to assessing the baseline condition of the wetlands for this project. This conclusion is supported by the fact that "A Regional Guidebook for Assessing the Functions of Low Gradient, Riverine Wetlands in Western Kentucky" is still provided as a valid tool on the Corps' Wetland Research Technology Center's webpage.

Time to conduct assessment

The assessment method can be rapidly applied and assessed. Larger sites and multiple sample points may increase time necessary to collect data. The “Hydrogeomorphic (HGM) Approach to Assessing Wetland Functions: Guidelines for Developing Guidebooks (Version 2)” states:

“Individuals experienced with the HGM Approach report that, under normal circumstances, the protocols for assessing wetland functions prescribed in guidebooks can be completed in one day or less, including preparation time, travel time, field data collection, and analysis (Whigham et al. 2007, Kleindl et al. 2010, Berkowitz et al. 2011).”

Calibration

Additional reference data to refine calibration for the West Kentucky models in Indiana would be a long-term goal for wetland assessment in the state. However, collection of additional reference data can be a labor and time intensive process which includes peer review. While calibration could refine the functional capacity index (FCI) scores of each function in a given area, the HGM assessment by design looks at some of the interrelations of the functions. Murray and Klimas (2013) found that collecting additional data in areas of the MAV not originally covered in their 2011 Arkansas Guidebook did not appreciably change the models used. As we are recommending the use of an HGM that was calibrated in a similar positioned area, large changes in FCI are not anticipated.

Therefore, we believe that it is acceptable to use the published HGM to determine the function of the riverine wetlands and estimate the functional loss on the same site using the West KY low grade HGM without calibration in Indiana. Likewise, this HGM could be used to review potential mitigation sites in the same area that are also riverine wetlands and to give a reasonable assessment of those functions and/or estimate of functional improvements that could be achieved.

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